

AUG 29 2006

GN05006

PATENT

REMARKS

Claims 1-15 are pending.

No new subject matter has been added to the specification or claims.

Claims 6-8 and 12-14 were objected to for being of improper form. This objection is respectfully traversed and overcome by the above amendments to the claims. None of the pending claims are in multiple dependent form.

Claims 1-7, 9-12 and 14 were rejected under 35 U.S.C. §103 over Cleary et al. (US 6,457,823) in view of Wu et al. (US 2002/0149659) and Carlson et al. (US 6,534,128). This rejection is respectfully traversed as follows.

In determining a prima facie case for obviousness under 35 U.S.C. §103, it is necessary to show that the combination of prior art teachings is proper, and that those teachings are sufficient to *suggest* making the claimed modifications to one of ordinary skill in the art.

Cleary discloses an ink jet printing method and print head arrangement wherein a carriage holds a series of ink jet print heads which may deposit four layers of ink simultaneously on a region of the substrate located beneath the four sets of print heads (Cleary col.4, lines 39-43). Cleary further discloses that the paths w1-w2-w3 successively printed with the print head arrangement do not overlap (Cleary col. 5, lines 17-34). Cleary thereby implicitly discloses that during the printing of a single path, the ink drops from the four different colors of ink may be printed drop-on-drop before they are exposed to an amount of energy, referred to as the "set energy".

It is common practice in the field of inkjet printing that ink manufacturers spend a lot of money and effort in tuning an ink formulation for a given inkjet print head in order to get the formulation certified by the inkjet print head manufacturer for use with their print head in

GN05006

PATENT

standard printing operating conditions, and for certifying the formulation for use with a specific printing substrate or range of substrates. It is further known that, once an ink formulation is certified, ink manufacturers target the different color inks in a *CMYK ink set to have substantially identical properties* in order to guarantee identical performance of the different colors for a specific inkjet printing head in a given inkjet printing process. This common general knowledge therefore *teaches away from the current invention* whereby in the same inkjet printing process inks are used which each have different viscosity, surface tension or curing speed.

In contrast to the current invention, *Cleary does not disclose that successive ink drops printed drop-on-drop each have a different viscosity, surface tension or curing speed. Nor does Cleary disclose that the viscosity, surface tension or curing speed of ink drops printed drop-on-drop vary in a graduated manner within a given range from the first to the last drop applied.*

As argued above, Cleary supports the common knowledge of inkjet professionals to strive for uniformity in performance of inks used in printing heads of a particular inkjet system. There is *no suggestion or motivation in Cleary* for one skilled in the art to provide an inkjet system which varies the viscosity, surface tension or curing speed of each ink and to further do so in a graduated manner between drops as claimed.

Carlson discloses that fluid compositions can be formulated that have appropriate surface tension characteristics for specific inkjet printers for specific inkjet applications (col. 5, lines 12-14). Carlson further discloses that preferred formulations have a surface tension in the range of about 20 dynes/cm to about 50 dynes/cm, more preferably in the range of about 22 dynes/cm to about 40 dynes/cm at the printhead operating temperature (Carlson col. 5, lines 4-7).

GN05006

PATENT

Carlson merely states that inks with different surface tension can be made. The advantage is self-evident from the admitted common knowledge that inkjet inks need to be tuned for optimal performance in a given inkjet print head, and that surface tension is one of the parameters that may be used in this tuning process.

Carlson does not overcome the shortcomings of Cleary since *Carlson does not disclose or suggest the use of inks with different surface tension for use in the same inkjet printing process*. Furthermore, *Carlson does not disclose or suggest an ink set having inks with surface tensions gradually varying from the first ink to the last ink used in the inkjet printing process*. Moreover, there is *no suggestion or motivation* in Carlson for one skilled in the art to provide such a system.

Wu discloses in general terms in the background of the invention that jetting fluids must meet stringent performance requirements in order for the fluid to be appropriately jettable (Wu, §[0004]) and that for example the viscosity of inkjet fluids for piezo print heads typically is within a range of 10 to 30 mPa.s at print head temperature (Wu, § [0004]). In view of the commonly known ink formulation certification process described above, the disclosure of Wu confirms that in practice inks with different viscosities exist as required by different print heads having different operating conditions. Wu does not teach that two inks used in the same inkjet printing process have a different viscosity. Hence, Wu does not overcome the shortcomings of Cleary.

In sum, Cleary does not disclose that successive ink drops printed drop-on-drop each have a different viscosity, surface tension or curing speed. Nor does Cleary disclose that the viscosity, surface tension or curing speed of ink drops printed drop-on-drop vary in a graduated manner within a given range from the first to the last drop applied. Even if Cleary is improperly

GN05006

PATENT

combined with Carlson and Wu, neither Carlson nor Wu overcome the above-identified shortcomings in Cleary, hence the combination would not result in the current invention as claimed.

The prior art made of record and not relied upon has been reviewed but is not considered material to the patentability of the invention.

No fees are believed to be due with this response. However, if an error has been made in the fee calculations, please charge any excess fees due to Deposit Account No. 13-3377 under this general authorization.

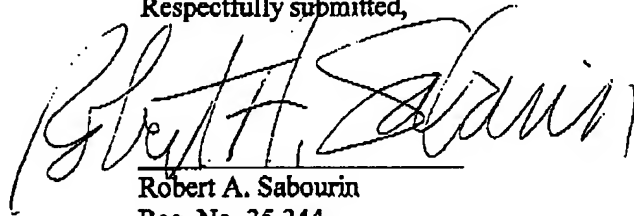
It should be noted that the above arguments are directed towards certain patentable distinctions between the claims and the prior art cited. However, the patentable distinctions between the pending claims and the prior art cited are not necessarily limited to those discussed above.

GN05006

PATENT

In view of the foregoing remarks and amendments, it is respectfully submitted that each rejection of the Office Action has been addressed and overcome so that this application is now in condition for allowance. The Examiner is respectfully requested to reconsider the application, withdraw the rejections and/or objections, and pass the application to issue. Should questions arise during examination, the Examiner is welcome to contact the applicant's attorney as listed below.

Respectfully submitted,



Robert A. Sabourin
Reg. No. 35,344

Agfa Corporation
Law & Patent Department
200 Ballardvale Street
Wilmington, MA. 01887-1069

Tel: 978-284-5604

RAS/pc